

Site Visit Report

Under the *European Union (Drinking Water) Regulations 2023*, the Environmental Protection Agency (EPA) is the supervisory authority in relation to Uisce Éireann and its role in the provision of public drinking water supplies. This audit was carried out to assess the performance of Uisce Éireann in providing clean and wholesome water to the public water supply named below.

The audit process is a sample of the performance of a water treatment plant and public water supply on a given date.

| Water Supply Zone | |
|---------------------------------|---------------|
| Name of Installation | Slane |
| Organisation | Uisce Éireann |
| Scheme Code | 2300PUB1018 |
| County | Meath |
| Site Visit Reference No. | SV27614 |

| Report Detail | |
|--------------------|----------------|
| Issue Date | 13/04/2023 |
| Prepared By | Lorcan Farrell |

| Site Visit Detail | | | |
|----------------------------|---|------------------|-------|
| Date Of Inspection | 14/03/2023 | Announced | Yes |
| Time In | 11:00 | Time Out | 12:50 |
| EPA Inspector(s) | Lorcan Farrell | | |
| Additional Visitors | | | |
| Company Personnel | Uisce Éireann: Daniel Behan, Stephen Brennan, Pat Collins. Meath County Council (Working in partnership with Uisce Éireann): Linda Doran, Willie Fay, Helen McDonnell, Joe McDermott, Norbert McMahon. | | |

> Summary of Key Findings

(1) The location of the chlorine contact time verification monitor on the Stanley Hill supply line is located 1 km away from the point of verification as specified in the chlorine contact time calculation for the supply. The location of this monitor may not be appropriate to reflect conditions at the point of verification at Stanley Hill reservoir for both outlets at the reservoir.

(2) There was no plant shutdown setpoint in place based on chlorine residual levels after contact time on the Stanley Hill supply line.

> Introduction

Slane Public Water Supply serves a population of 3,266 people (EDEN figures) and the treatment plant produces approximately 1,800- 2,000 m³/day depending on demand. The treatment plant sources its water from two boreholes adjacent to the plant and supplies two separate supply lines that receive different treatment.

The treatment on the Beauparc supply line consists of UV disinfection (primary disinfection) and chlorination (secondary disinfection). The UV system was installed under Uisce Éireann's Disinfection Programme in 2021 as at that time, there were properties served before chlorine contact time could be achieved.

The treatment on the Stanley Hill supply line consists of chlorination only and provides water for the Slane Hill reservoir and the Drogheda Road supply line. The Stanley Hill supply line was not included under the Disinfection Programme works carried out at the treatment plant.

The audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on the alarms and inhibits in place at the treatment plant and the procedures in place to ensure appropriate oversight of treatment processes.

> Supply Zones Areas Inspected

The audit included a site tour of Slane WTP.



1. Alarms, Inhibits & Oversight Audits 2023

| | Answer | |
|--|---|-----|
| 1.1 | Is there a chlorine residual monitor located after contact time for verification of primary disinfection? | Yes |
| Comment | | |
| <p>(1) The Stanley Hill reservoir is fed from the treatment plant via a rising main. The outlet of the reservoir is specified as the point at which chlorine contact time has been achieved according to the chlorine contact time validation calculation submitted before the audit. There are two supply lines leaving Stanley Hill reservoir, one connecting to Chapel Hill pump station (which pumps to Slane Hill reservoir) and one supplying the Drogheda Road area of the network. There is a chlorine residual monitor located at the Chapel Hill pumping station which is located approximately 1 Km downhill from Stanley Hill reservoir and provides chlorine contact time verification for the Stanley Hill supply line. The location of this monitor may not be appropriate to reflect conditions at the point of verification at Stanley Hill reservoir.</p> <p>(2) There is no chlorine residual monitor located on the second supply line leaving Stanley Hill reservoir supplying the Drogheda Road area of the network to verify chlorine contact time has been achieved. It was stated by Meath County Council at the audit that the chlorine contact time verification monitor at Chapel Hill pump station acts as the verification monitor for the Drogheda Road supply line.</p> <p>(3) Stanley Hill reservoir is on the Uisce Éireann Treated Water Storage Programme and is due to be upgraded. Uisce Éireann stated in correspondence received after the audit that that it was envisaged that a new larger capacity reservoir would be built at Stanley Hill with the project expected to be completed by 2025.</p> | | |

| | Answer | |
|--|---|-----|
| 1.2 | Is suitable continuous monitoring in place to verify treatment performance? | Yes |
| Comment | | |
| <p>(1) There are continuous chlorine monitors located at the treatment plant on both the Stanley Hill and Beuparc supply lines for sodium hypochlorite dosing verification. These residual chlorine monitors measure total chlorine only and have warning alarm and plant shutdown setpoints in place.</p> <p>(2) There is an additional continuous chlorine monitor located at Beuparc Reservoir to monitor secondary disinfection. This residual chlorine monitor also measures total chlorine only.</p> | | |

| | Answer | |
|--|--|-----|
| 1.3 | Has UÉ carried out an alarm and inhibit review at the water treatment plant? | Yes |
| Comment | | |
| <p>(1) An alarm and inhibit review took place after works were completed under the disinfection programme in 2021.</p> | | |

| | | Answer |
|--|---|--------|
| 1.4 | Were all findings of the UÉ alarm and inhibit review implemented? | No |
| Comment | | |
| <p>(1) It was stated by Meath County Council that the findings of the Alarm and Inhibit review had not been formally agreed upon but will inform further works to be completed at the treatment plant under the Uisce Éireann Water Treatment Plant Upgrade Programme. A provisional completion date for these works was given as Q4 2026 in information submitted by Uisce Éireann after the audit.</p> | | |

| | | Answer |
|--|--|--------|
| 1.5 | Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network? | No |
| Comment | | |
| <p>(1) There is no treatment plant shutdown setpoint based on verified chlorine residuals after contact time has been achieved. There is a free residual chlorine warning alarm setpoint of 0.4mg/l in place on the free chlorine residual monitor at Chapel Hill which functions as the chlorine contact time verification monitor for the Stanley Hill supply line. There are High/Low total chlorine shutdown setpoints of 1.5mg/l and 0.3mg/l in place after sodium hypochlorite dosing at the treatment plant on the Stanley Hill supply line.</p> <p>(2) There is no run to waste facility at the treatment plant. Meath County Council stated that provision of a run to waste system will be considered under the Uisce Éireann Water Treatment Plant Upgrade Programme.</p> | | |

| | | Answer |
|--|---|--------|
| 1.6 | Is there a documented alarm response procedure? | No |
| Comment | | |
| <p>(1) While there were informal procedures covering the response to alarms at the treatment plant, there was no documented site specific alarm response procedure in place.</p> | | |



2. Site Specific Issues

| | Answer |
|---|--------|
| 2.1 Are treatment process chemicals appropriately managed and stored? | No |
| Comment | |
| (1) There was a chemical storage can acting as an overflow vessel for the sodium hypochlorite dosing system located in an unbunded area of the treatment plant. | |

Recommendations

| Subject | Slane Audit Recommendations | Due Date | 15/05/2023 |
|--------------------|--|----------|------------|
| Action Text | <p>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.</p> <ol style="list-style-type: none">1. Ensure that the monitoring in place to verify adequate chlorine residuals after contact time is suitable and represents all supply lines leaving the point of verification at Stanley Hill reservoir. Provide an appropriate plant shutdown setpoint based on chlorine contact time verification.2. Implement the findings of the Alarm and Inhibit review to protect treatment processes and treated water quality.3. Investigate the feasibility of installing a run to waste system at the treatment plant.4. Ensure that: (i) a formal site specific alarm response procedure is in place at the treatment plant and (ii) provide training to relevant staff (including relief and temporary staff) on the requirements of the alarm response procedure.5. Ensure that all chemicals are stored in bunded areas capable of containing at least 110% of the volume of chemicals stored therein.6. Investigate the feasibility of replacing total chlorine residual monitors with free chlorine residual monitors within the supply. <p>Actions required by Uisce Éireann</p> <p>During the audit, Uisce Éireann representatives were advised of the audit findings and that action must be taken by Uisce Éireann to address the issues raised.</p> <p>Uisce Éireann should submit a report to the EPA on or before 15/05/2023 detailing the actions taken and planned, with timescales, to close out the above recommendations.</p> <p>The EPA advises that the findings and recommendations from this audit report should, where relevant, be addressed at other public water supplies.</p> | | |